



MATERIAL SAFETY DATA SHEET

Ultra Low Sulfur Diesel (ULSD)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Ultra Low Sulfur Diesel

SUPPLIER: GULF OIL LIMITED PARTNERSHIP
275 WASHINGTON STREET, SUITE 300
NEWTON, MASSACHUSETTS 02458-1646

24 - Hour Transportation Emergency:
CHEMTREC: 800-424-9300

MSDS Internet Website: WWW.GULFOIL.COM

EMERGENCY OVERVIEW

Health Hazards/Precautionary Measures: May be harmful or fatal if swallowed. Harmful or fatal if swallowed, can enter lungs and cause damage. Can cause eye, skin, or respiratory tract irritation. Maybe harmful if inhaled or absorbed through the skin. Overexposure can cause central nervous system (CNS) depression and/or other target organ effects. Possible cancer hazard (See Section 3). Harmful to aquatic organisms.

Physical Hazards/Precautionary Measures: Warning! Combustible liquid; vapor may cause flash fire. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

Appearance: Transparent, clear to yellow or red
Physical Form: Liquid
Odor: Characteristic, kerosene-like

NFPA Hazard Class:

Health: 0 (Least)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

HMIS Hazard Class

Health: 2* (Moderate)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

*Indicates possible chronic health effects.

2. COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT FAMILY: MOTOR FUEL

SYNONYMS: No. 2-D Grade Diesel Fuel Oil (defined by ASTM D-975); Treated or Refined Diesel Fuel No. 2; Diesel No. 2; Diesel Motor Fuel No. 2; Diesel Oil (Medium); Grade 2 Distillate Fuel; Hydrodesulfurized (HDS) Light Catalytically cracked Distillate; Middle Distillates (Petroleum); HDS Diesel; Hydrodesulfurized Medium Distillate; HDS Middle Distillate; C9-C16 Petroleum Hydrocarbons

This product may be composed, in whole or in part, of any of the following refinery streams.

Diesel Fuel No. 2 [CAS no.: 68476-34-6]
Hydrodesulfurized Middle Distillate (petroleum) [CAS No.: 64742-80-9]
Hydrodesulfurized Light Catalytic Cracked Distillate (Petroleum) [CAS No.:68333-25-5]
Kerosene [CAS No.: 8008-20-6]
Hydrodesulfurized Kerosene (Petroleum) [CAS No.: 64742-81-0]

This product contains the following chemical components:

Component Name	CAS Registry No.	Concentration (%)
Nonane, all isomers	Mixture	1-10
Trimethylbenzenes, all isomers	25551-13-7	0-2
Naphthalene	91-20-3	0-2
Biphenyl (Diphenyl)	92-52-4	0-2
Cumene	98-82-8	0-1
Ethylbenzene	100-41-4	0-1

3. HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS

Major Route(s) of Entry Skin contact. Inhalation

Signs and Symptoms of Acute Exposure

Inhalation Breathing high concentrations may be harmful. Mist or vapor can irritate the throat and lungs. Breathing this material may cause central nervous system depression with symptoms including nausea, headache, dizziness, fatigue, drowsiness, or unconsciousness.

Eye Contact This material can cause eye irritation with tearing, redness, or a stinging or burning feeling. Further, it can cause swelling of the eyes with blurred vision. Effects may become more serious with repeated or prolonged contact.

Skin Contact This material can cause skin irritation. Symptoms include redness, itching and burning of the skin. This material can be absorbed by the skin and produce central nervous system depression (headache, nausea, fatigue and/or other symptoms including unconsciousness). If the skin is damaged, absorption increases. Prolonged and/or repeated contact may cause severe dermatitis and/or more serious skin disorders. Chronic symptoms may include drying, swelling, scaling, blistering, cracking and/or severe tissue damage.

Ingestion

If swallowed, this material may irritate the mouth, throat and esophagus. It can be absorbed into the blood stream through the stomach and intestinal tract. Symptoms may include a burning sensation of the mouth and esophagus, nausea and vomiting. In addition, it can cause central nervous system effects characterized by dizziness, staggering, drowsiness, delirium and/or loss of consciousness.

Because of the low viscosity, this material can enter the lungs directly by aspiration during swallowing or subsequent vomiting. Aspiration of a small amount of liquid can cause severe lung damage and/or death.

**Chronic
Health Effects
Summary**

Secondary effects of ingestion and subsequent aspiration into the lungs may cause pneumatocele (lung cavity) formation and chronic lung dysfunction.

This product contains petroleum middle distillates similar to those shown to produce skin tumors on laboratory rodents following repeated application. All tumors appeared during the latter portion of the typical 2-year lifespan of the animals. Certain studies have shown that washing the exposed skin of the test animals with soap and water between treatments greatly reduces the potential tumorigenic effects. These data suggest that good personal hygiene is effective in reducing the risk of this potential adverse health effect.

This material and/or its components have been associated with developmental toxicity, reproductive toxicity, genotoxicity, immunotoxicity, and/or carcinogenicity. Refer to Section 11 of this MSDS for additional health-related information.

**Conditions
Aggravated by
Exposure**

Disorders of the following organs or organ systems that may be aggravated by significant exposure to this material or its components include: Skin, Respiratory System, Liver, Kidneys, Central Nervous System (CNS).

Target Organs

May cause damage to the following organs: kidneys, lungs, liver, mucous membranes, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Carcinogenic Potential

This material may contain ethylbenzene and naphthalene at concentrations above 0.1%. IARC has identified ethylbenzene and naphthalene as possibly carcinogenic to humans (Group 2B) based on laboratory animal studies. The NTP has determined that naphthalene is *reasonably anticipated to be a human carcinogen* based on sufficient evidence from studies in experimental animals. NTP has determined that exposure to diesel exhaust particulates, a complex mixture of combustion products of diesel fuel, is *reasonably anticipated to be a human carcinogen*.

OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Irritant <input checked="" type="checkbox"/>	Sensitizer <input type="checkbox"/>	Combustible <input checked="" type="checkbox"/>	Explosive <input type="checkbox"/>	Pyrophoric <input type="checkbox"/>
Toxic <input type="checkbox"/>	Highly Toxic <input type="checkbox"/>	Flammable <input type="checkbox"/>	Oxidizer <input type="checkbox"/>	Water-reactive <input type="checkbox"/>
Corrosive <input type="checkbox"/>	Carcinogenic <input checked="" type="checkbox"/>	Compressed Gas <input type="checkbox"/>	Organic Peroxide <input type="checkbox"/>	Unstable <input type="checkbox"/>

 4. FIRST AID MEASURES

Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

Inhalation Move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If breathing is difficult, 100 percent humidified oxygen should be administered by a qualified individual. Seek medical attention immediately. Keep the affected individual warm and at rest.

Eye Contact Check for and remove contact lenses. Flush eyes with cool, clean, low-pressure water for at least 15 minutes while occasionally lifting and lowering eyelids. Do not use eye ointment unless directed to by a physician. Seek medical attention if excessive tearing, irritation, or pain persists.

Skin Contact Remove contaminated shoes and clothing. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. Do not use ointments. If skin surface is not damaged, clean affected area thoroughly with mild soap and water. Seek medical attention if tissue appears damaged or if pain or irritation persists.

Ingestion Do not induce vomiting. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.

Notes to Physician INHALATION: Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Administer supplemental oxygen with assisted ventilation, as required.

INGESTION: If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.

5. FIRE FIGHTING MEASURES

NFPA Flammability Classification	NFPA Class-II combustible liquid		
Flash Point	Closed cup: AP 52°C (AP 125°F). (Pensky-Martens.)		
Lower Flammable Limit	AP 0.6%	Upper Flammable Limit	AP 7.5%
Autoignition Temperature	>254°C (>489°F)		
Hazardous Combustion Products	Carbon dioxide, carbon monoxide, smoke fumes, unburned hydrocarbons and oxides of sulfur and nitrogen.		
Special Properties	Combustible Liquid! This material releases vapors when heated above ambient temperatures. Vapors can cause a flash fire. Vapors can travel to a source of ignition and flashback. A vapor and air mixture can create an explosion hazard in confined spaces such as sewers. Use only with adequate ventilation. If container is not properly cooled, it can rupture in the heat of a fire.		
Extinguishing Media	SMALL Fire: Use dry chemicals, carbon dioxide, foam, or inert gas (nitrogen). Carbon dioxide and inert gas can displace oxygen. Use caution when applying carbon dioxide or inert gas in confined spaces. LARGE FIRE: Use foam, water fog or water spray. Water fog and spray are effective in cooling containers and adjacent structures. However, water can cause frothing and/or may not extinguish the fire. Water can be used to cool the external walls of vessels to prevent excessive pressure, autoignition or explosion. DO NOT use a solid stream of water directly on the fire as the water may spread the fire to a larger area.		
Protection of Fire	Firefighters must use full bunker gear including NISOH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from a venting safety device or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify		

appropriate authorities of potential fire and explosion hazard if liquid enter sewers or waterways.

6. ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and safety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible liquid! Release can result in a fire hazard. Evacuate all non-essential personnel from release area. Establish a regulated zone with site control and security. Eliminate all ignition sources. Stop the leak if it can be done without risk. A vapor-suppressing foam may be used to reduce vapors. Properly bond or ground all equipment used when handling this material. Avoid skin contact. Do not walk through spilled material. Verify that responders are properly trained and wearing appropriate personnel protective equipment. Dike far ahead of a liquid spills. Do not allow released material to entry waterways, sewers, basements, or confined areas. This material will float on water. Absorb or cover with dry earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material. Place spent sorbent materials, free liquids and other clean-up debris into proper waste containers for appropriate disposal. Certain releases must be reported to the National Response Center (800-424-8802) and state or regulatory authorities. Comply with all laws and regulations.

7. HANDLING AND STORAGE

Handling

Combustible Liquid!

A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters and when it is agitated. A static discharge can ignite accumulated vapors particularly during dry weather conditions. Always bond receiving containers to the fill pipe before and during loading. Always keep nozzle in contact with the container throughout the loading process. Do not fill any portable container in or on a vehicle. Special precautions, such as reduced loading rates and increases monitoring, must be observed during "switch loading" operations (i.e. loading this material in tanks or shipping compartments that previously contained gasoline or similar low flash point products).

Fire hazard increases as product temperature approaches its flash point. Keep container closed and drum bungs in place. Remove spillage immediately from walking areas. Do not handle or store near heat, sparks or other potential ignition sources. Do not handle or store with oxidizing agents. Avoid breathing mist or vapor. Never siphon by mouth. Do not taste or swallow. Avoid contact with eyes, skin and clothing. Use gloves constructed of impervious materials and protective clothing if direct contact is anticipated. Provide ventilation

to maintain exposure potential below applicable exposure levels. Avoid water contamination. Wash thoroughly after handling. Prevent contact with food or tobacco products.

When performing repairs and maintenance on contaminated equipment, keep unnecessary persons from hazard area. Eliminate heat, flame and other potential ignition sources. Drain and purge equipment, as necessary, to remove material residue. Remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

Do not use this material as fuel for equipment, such as portable heaters, in enclosed areas. Hazardous combustion products can cause death.

Protect the environment from releases of this material. Prevent discharges to surface waters and groundwater. Maintain handling, transfer and storage equipment in proper working order.

Misuse of empty containers can be dangerous. Empty containers may contain materials residues which can ignite with explosive force. **Cutting or welding of empty containers can cause fire, explosion, or release of toxic fumes from residues.** Do not pressurize or expose empty containers to open flame, sparks, or heat. Keep container closed and drum bungs in place. All label warnings and precautions must be observed. Return empty drums to a qualified reconditioner. Consult appropriate federals, state and local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this material.

Storage

Store in a cool, dry, well-ventilated place. Keep containers tightly closed. Do not store this product near heat, flame or other potential ignition sources. Do not store with oxidizers. Do not store this product in unlabeled containers. Do not puncture or incinerate containers. Ground all equipment containing this material. All electrical equipment in areas where this material is stored or handles must meet all applicable requirements of the NFPA's National Electrical Code (NEC). Store and transport in accordance with all applicable laws.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls

Provide ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below the applicable workplace exposure limits indicated below. All electrical equipment should comply with the National Electric Code. An emergency eye wash station and safety shower should be located near the work-station.

Personal Protective Equipment

Personal protective equipment should be selected based upon the condition under which this materials is used. A hazard assessment of the work areas for PPE requirements should be

conducted by a qualified professional pursuant to OSHA regulations. For certain operations, additional PPE may be required.

Eye Protection Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. Chemical goggles should be worn during transfer operations or when there is a likelihood of misting, splashing, or spraying of this material. A suitable emergency eye wash water and safety shower should be located near the work stations.

Hand Protection Avoid skin contact. Use heavy duty gloves constructed of chemical resistant materials such as Viton® or heavy nitrile rubber. Wash hands with plenty of mild soap and water before eating, drinking, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasives as skin cleaners.

Body Protection Avoid skin contact. Wear long-sleeved fire-retardant garments (e.g. Nomex®) while working with flammable and combustible liquids. Additional chemical-resistant protective gear may be required if splashing or spraying conditions exist. This may include an apron, boots and additional facial protection. If product comes in contact with clothing, immediately remove soaked clothing and shower. Promptly remove and discarded contaminated leather goods.

Respiratory Protection Airborne concentration will determine the level of respiratory protection required. Respiratory protection is normally not required unless the product is heated or misted. For known or anticipated vapor or mist concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator equipped with a dust/mist prefilter if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements 29 CFR 1910.134).

General Comments Warning! Use of this material in spaces without adequate ventilation may result in generation of hazardous levels of combustion products and/or inadequate oxygen levels for breathing. Odor is an inadequate warning for hazardous conditions.

Occupational Exposure Guidelines

Substance	Applicable Workplace Exposure Levels
Nonane, all isomers	ACGIH (United States) TWA: 200 ppm 8 hour(s)
Ethylmethylbenzene, all isomers	Not available
Trimethylbenzenes, all isomers	ACGIH (United States) TWA: 25 ppm 8 hour(s)
Naphthalene	ACGIH (United States). Skin

	TWA 10 ppm 8 hours(s) STEL: 15 ppm 15 minute(s) OSHA (United States) TWA: 10 ppm 8 hours(s)
Biphenyl (Diphenyl)	ACGIH TLV (United States) TWA: 0.2 ppm 8 hours(s) OSHA PEL Z2 (United States) TWA: 0.2 ppm 8 hour(s)
Cumene	ACGIH (United States) TWA: 50 ppm 8 hour(s) OSHA (United States). Skin TWA: 50 ppm 8 hour(s)
n-Propylbenzene	Not available
1, 2 4 Trimethylbenzene	Not available
Ethylbenzene	ACGIH (United States) TWA: 100 ppm 8 hour(s) STEL: 125 ppm 15 minute(s) OSHA (United States) TWA: 100 ppm 8 hour(s)
Xylene, all isomers	ACGIH (United States) TWA: 100 ppm 8 hour(s) STEL: 150 ppm 15 minute(s) OSHA (United States) TWA: 100 ppm 8 hour(s)
Diesel exhaust particulate	Not available
Benzene	ACGIH (United States): Skin TWA: 0.5 ppm 8 hour(s) STEL: 2.5 ppm 15 minute(s) OSHA (United States). Skin Notes: See Table Z-2 for exclusions in 20 CFR 1910.1028 to the PEL TWA: 1 ppm 8 hour(s) STEL: 5 ppm 15 minute(s)
Toluene	ACGIH (United States) TWA: 50 ppm 8 hour(s) OSHA (United States) TWA: 200 ppm 8 hour(s) CEIL: 300 ppm PEAK: 500 ppm
Middle distillates, petroleum	Not available
Distillates, petroleum, light Catalytic cracked	Not available
Kerosene	NIOSH REL (United States) TWA: 100 mg/m ³ 8 hour(s)

Hydrodesulfurized middle
Distillate (petroleum) Not available

Hydrodesulfurized Kerosene
(Petroleum) Not available

Distillate, petroleum,
Hydrodesulfurized light
Catalytic cracked Not available

Diesel Fuel No. 2 **ACGIH TLV (United States). Skin**
TWA: 100 mg/m³ 8 hour(s)

9. PHYSICAL AND CHEMICAL PROPERTIES (TYPICAL)

Physical State Liquid.
Color Transparent, clear to yellow or red
Vapor AP 5 (Air = 1)
pH Not Applicable
Specific Gravity AP 0.84 (Water=1)
Odor Characteristic, kerosene-like
Boiling Range 154°C (309° F) to 371°C (700°F)
Melting/Freezing Point Not available
Vapor Pressure <0.3kPa (<2mm Hg) (at 20°C)
Volatility 840 g/l VOC (w/v)
Solubility in Water Very slightly soluble in cold water. (<0.1% w/w)
Viscosity (cSt @ 40°C) AP 3
Flash Point Closed cup: AP 52°C (AP 125°F) (Pensky-Martens).
Additional Properties Density = AP 7.0 lbs/gal.
Viscosity (ASTM D2161) = 30 - 40 SUS @ 100°F

10. STABILITY AND REACTIVITY

Chemical Stability Stable **Hazardous Polymerization** Not expected to occur.

Conditions to Avoid Keep away from all ignition sources and strong oxidizing conditions.

Materials Incompatibility Strong acids, alkalis, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide and oxygen.

Hazardous Decomposition Products No additional hazardous decomposition products were identified other than the combustion products identified in Section 5 of this MSDS.

11. TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hazards Identification in Section 3 of this MSDS

Toxicity Data Diesel Fuel No. 2

ORAL LD50, Acute: 12,000 to 17,500 mg/kg or 9.0 ml/kg [Rat]
DERMAL LD50, Acute: >5.0 ml/kg [Rabbit screen level]
DRAIZE EYE, Acute: Mild irritant [Rabbit]
DRAIZE DERMAL, Acute: Severe skin irritant {Rabbit}
BUEHLER DERMAL, Acute: Non-sensitizing [Guinea Pig]
14-Day DERMAL, Sub-chronic: 0% and 67% mortality at 4.0 and 8.0 ml/kg [Rabbit]
62-Week DERMAL, Chronic: 0.05 ml/kg 3x/week [Mouse] - Extreme skin irritation.
97-Week DERMAL, Chronic: 243 g/kg applied 3x/week [Mouse] - Extreme skin irritation
Moderate increase in contact-point skin tumors.
MUTAGENICITY:
Modified Ames Assay: Negative. [Salmonella typhimurium]
In-vitro SCE Ovary Assay: Negative. [Chinese Hamster]
In-vitro Lymphoma Assay: Negative. [Mouse]
In-vivo Dominant Lethal Assay: Negative. [Mouse]
In-vivo Bone Marrow Assay: Clastogenic at 2.0 ml/kg and 6.0 ml/kg [Rat]

Diesel exhaust particulate

Lung tumor and lymphomas were identified in rats and mice exposed to unfiltered diesel fuel exhaust in chronic inhalation studies. Further, epidemiological studies have identified increased incidences of lung cancer in US railroad workers and bladder cancer in bus and truck drivers possibly associated with exposure to diesel engine exhaust. NTP has determined that exposure to diesel exhaust particulates, a complex mixture of combustion products of diesel fuel, is reasonably anticipated to be a human carcinogen. In addition, NIOSH has identified complete diesel exhaust as a potential carcinogen.

Trimethylbenzenes, all isomers

Studies of Workers:

Levels of total hydrocarbon vapors present in the breathing atmosphere of these workers ranged from 10 to 60ppm. The TCLo for humans is 10ppm, with somnolence and respiratory tract irritation noted.

Studies in Laboratory Animals:

In inhalation studies with rats, four of ten animals died after exposures of 2400 ppm for 24 hours. An oral dose of 5 ml/kg resulted in death in one of ten rats. Minimum lethal intraperitoneal doses were 1.5 to 2.0 ml/kg in rats and 1.13 to 12 ml/kg in guinea pigs. Mesitylene (1, 3, 5 Trimethylbenzene) inhalation at concentrations of 1.5, 3.0 and 6.0 mg/L for six hours was associated with dose-related changes in white blood cell counts in rats. No significant effects on the complete blood count were noted with six hours per day exposure for five weeks, but elevations of alkaline phosphatase and SGOT were observed. Central nervous system depression and ataxia were noted in rats exposed to 5,100 to 9,180 ppm for two hours.

Naphthalene

Studies in Humans Overexposed to Naphthalene:

Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from over-exposure to naphthalene. Persons with Glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have also been reported from over-exposure to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect.

Studies in Laboratory Animals:

Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of sister Chromatid Exchange or chromosomal aberrations) *in vitro*.

Biphenyl (Diphenyl)

Studies in Humans overexposed to Biphenyl:

Evidence of adverse effects on the liver and the nervous system have been described in studies of workers exposed to high levels for prolonged periods.

Studies in Laboratory Animals:

Evidence of adverse effects on the kidney and liver, and changes in whole blood (reduced hematocrit and hemoglobin levels) have been observed in laboratory rodents following subchronic exposure to biphenyl.

Genotoxicity & Carcinogenicity:

Biphenyl tested negative in bacteriological systems but some evidence of positive response have been reported in mammalian cell systems in the presence of metabolic activation. The EPA has determined human and animal data are inadequate to classify the carcinogenic potential of biphenyl.

Ethylbenzene

Effects from Acute Exposure:

ORAL (LD50), Acute: 3,500 mg/kg [Rate].

DERMAL (LD50), Acute: 17,800 uL/kg [Rabbit].

INTRAPERITONEAL (LD50), Acute: 2,624 mg/kg [Rat].

Effects from Prolonged or Repeated Exposure:

Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (Tubular carcinomas) and female rats (tubular adenomas). Also, the incidence of tumors was elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure. The relevance of these findings to human is not clear at this time. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid and pituitary gland.

Middle distillates, petroleum

Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Freshwater Toxicity:

Concentration: 2400 ppm Exposure: 48 hrs. Species: Juven. Am Shad (*Squalius cephalus*)
Assay: TLM

Concentration: >127 ppm Exposure: 96 hrs. Species: Bluegill (*Lepomis macrochirus*)
Assay: LC50

Saltwater Toxicity:

Concentration: 10ppm Exposure: 96 hrs. Species: Menhaden (*Brevoortia patronus*)
Assay: LC50

Concentration: 10ppm Exposure: 96 hrs. Species: Grass Shrimp
Assay: LC50

Environmental Fate:

If spilled, this material will normally evaporate. Hydrocarbon components may contribute to atmospheric smog. If released to the subsoils, petroleum middle distillate fuels will strongly adsorb to soils. Groundwater should be considered as an exposure pathway. Liquid and vapor can migrate through the subsurface and preferential pathways (such as utility line backfill) to downgradient receptors.

Middle distillates are potentially toxic to freshwater and saltwater ecosystems. Distillate fuels will normally float on water. In stagnant or slow-flowing waterways, a hydrocarbon layer can cover a large surface area. As a result, this oil layer can limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway can cause a fish kill or create an anaerobic environment. Also, this coating action can also kill plankton, algae, and water birds.

13. DISPOSAL CONSIDERATIONS

Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

Maximize material recovery for reuse or recycling. Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001) and/or its toxic (D018) characteristics. In addition, conditions of use may cause this material to become a hazardous waste, as defined by Federal or State regulations. It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal. Transportation, treatment, storage and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR Parts 260 through 271). Contact your regional

US EPA office for guidance concerning case specific disposal issues. State and/or local regulations might be even more restrictive.

14. TRANSPORT INFORMATION

The shipping description below may not represent requirements for all modes of transportation, shipping methods or locations outside of the United States.

US DOT Status A U.S. Department of Transportation (DOT) regulated material. The following U.S. DOT hazardous materials shipping description applies to bulk packaged material that is transported by highway or rail. Alternate shipping descriptions may be required for product transported by marine vessel, air or other method and for non-bulk packaged material.

Proper Shipping Name Diesel Fuel, Combustible liquid, NA 1993, PG III

Hazard Class DOT Class: Combustible liquid with a flash. **Packing Group(s)** III
Point greater than 37.8°C (100°F). **UN/NA** NA
1993

Reportable Quantity A Reportable Quantity (RQ) has not been established for this material

Emergency Response Guide No. 128

MARPOL III Status Not a DOT "marine pollutant" per 49 CFR 171.8

15. REGULATORY INFORMATION

TSCA Inventory This product and/or its components are listed on the Toxic Substances Control Act (TSCA) inventory.

SARA 302/304 The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

Emergency Planning and Notification requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR 302.4 and 40 CFR 355. No components were identified.

SARA 311/312 Hazard Identification The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2. This material would be classified under the following hazard categories:
Fire, Acute (Immediate) Health Hazard, Chronic (Delayed) Health Hazard

SARA 313 Toxic This product contains the following components in concentrations above *de minimis*

Chemical Notification and Release Reporting levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA:
Naphthalene [CAS No.: 91-20-3] Concentration: 2%
Biphenyl (Diphenyl) [CAS No.: 92-52-4] Concentration: 2%
Ethylbenzene [CAS No.: 100-41-4] Concentration: 0.9%

CERCLA The comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. Chemical substances present in this product or refinery stream that may be subject to this statute are:
Naphthalene [CAS No.: 91-20-3] RQ = 100 lbs (45.36 kg) Concentration: 2%
Cumene [CAS No.: 98-82-8] RQ = 5000 lbs (2268 kg) Concentration: 0.9%
Ethylbenzene [CAS No.: 100-41-4] RQ = 1000 lbs (453.6 kg) Concentration: 0.9%
Xylene, all isomers [CAS No.: 1330-20-7] RQ = 100 lbs. (45.36 kg) Concentration: 0.9%
Benzene [CAS No.: 71-43-2] RQ = 10 lbs. (4.536 kg) Concentration: 0.045%

Clean Water Act (CWA) This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into the conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

California Proposition 65 This material may contain the following components which are known to the State of California to cause cancer, birth defects or other reproductive harm, and may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):
Diesel exhaust particulate
Naphthalene: <2%
Ethylbenzene: <1%
Toluene: <0.1%
Benzene: <0.1%

New Jersey Right-to-Know Label Diesel Fuel

Additional Remarks As minimum requirements, Gulf Oil Limited Partnership recommends that the following advisory information be displayed on equipment used to dispense diesel fuel. Additional warnings specified by various regulatory authorities may be required:
"Diesel Fuel DANGER: Combustible Liquid. Use as a Motor Fuel Only.
DO NOT FILL CONTAINERS THAT HAVE PREVIOUSLY CONTAINED GASOLINE OR OTHER FLAMMABLE LIQUIDS. Sparks from static electricity can ignite flammable vapor residues. PLACE CONTAINERS ON GROUND. DO NOT FILL ANY PORTABLE CONTAINER IN OR ON A VEHICLE. Containers must be metal

or other material approved for storing diesel fuel. Keep nozzle spout in contact with the container during the entire filling operation. NO SMOKING! Do not leave nozzle unattended during filling. **HARMFUL OR FATAL IF SWALLOWED.** If swallowed, do not induce vomiting. Call Physician immediately. Keep Out of Reach of Children. Avoid prolonged breathing of vapors. Never siphon by mouth. Do not store in vehicle or living space. Store and use in a well ventilated area. Do not use near heat, spark or flame. Keep container closed."

16. OTHER INFORMATION

Refer to top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

REVISION INFORMATION~~Version Number 5.0~~

Revision Date: May 2007

ABBREVIATIONS

AP: Approximately EQ: Equal >: Greater Than <: Less Than NA: Not Applicable
ND: No Data NE: Not Established
ACGIH: American Conference of Governmental Industrial Hygienists
AIHA: American Industrial Hygiene Association
IARC: International Agency for research on Cancer
NTP: National Toxicology Program
NIOSH: National Institute of Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
NPCA: National paint and Coating Manufacturers Association
HMIS: Hazardous Materials Information System
NFPA: National Fire Protection Association
EPA: US Environmental Protection Agency

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